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CENTRAL INTELLIGENCE AGENCY

REPORT

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INFORMATION REPORT

COUNTRY	USSR
SUBJECT	Scientific Research
PLACE ACQUIRED	USSR
DATE OF INFORMATION	1947
DATE DISTR.	18 May 1948
NO. OF PAGES	2
NO. OF ENCLS. (LISTED BELOW)	1039-88
SUPPLEMENT TO REPORT NO.	

STAT

THIS IS UNEVALUATED INFORMATION FOR THE RESEARCH USE OF TRAINED INTELLIGENCE ANALYSTS

SOURCE Documentary as indicated. (Information specifically requested.)

RECENTLY PUBLISHED RESEARCH OF THE SOVIET SCIENTIST A. N. FRUMKIN

"Relation between the Wetting of Mercury and the Nature of the Solvent," I. P. Tverdovskiy, A. N. Frumkin

"Zhur Fiz Khim" 21, 1947, pp 819-24

Nitrogen bubbles, 0.15 - 0.4 mm in diam, were placed on, or pressed against a Hg surface in 0.3 N NH_4NO_3 solutions in alcohol-H_2O mixtures, the Hg polarized cathodically, and the interfacial tension σ_{12} at the Hg-solution boundary and contact angle θ were determined as functions of the applied voltage V. In H_2O θ passes through a maximum (about 100°) at the V of the electrocapillary maximum. The higher the concentration of EtOH, the smaller the θ and the smaller its dependence on V. From the equation $\sigma_{13} - \sigma_{12} = \sigma_{23} \cos \theta$ it is concluded that at high EtOH concentrations, when θ is almost independent of V, although σ_{12} depends on it, the tension σ_{13} of the Hg-bubble boundary varies with V as does σ_{12}. This shows that N is separated from Hg by a film of the solution which is thick enough to have properties of the bulk phase. The surface tension σ_{23} of 0.3 N NH_4NO_3, solutions also was measured.

"The Adhesion of Mercury to Glass in Solutions of Electrolytes," A. V. Gorodetskaya, A. N. Frumkin and A. S. Titiyevskaya, Inst of Phys Chem, Acad Sci USSR, Moscow, 14 pp

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"Zhur Fiz Khim" Vol XXI, No 6, Jun 1947

The kinetics of adhesion was observed and the curve angle was measured for the adhesion of glass to mercury in a solution of electrolyte, depending upon the composition and concentration of the solution and upon the charge of the mercury. It was found that in solutions of Na_2SO_4, H_2SO_4 and NaOH the breaking of the film of the solution and adhesion takes place sooner and the curve angle is greater than in lower concentrations of the solution; adhesion ceases in normal solutions.

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